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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,195	06/17/2005	Kostantinos Kourtakis	FC0002USPCT	2313

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E I Du Pont De Nemours and Company
Legal Patents
Wilmington, DE 19898

EXAMINER

HAILEY, PATRICIA L

ART UNIT	PAPER NUMBER
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1755

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/539,195	Applicant(s) KOURTAKIS, KOSTANTINOS	
	Examiner Patricia L. Hailey	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-10,12-16,22,23,25-29,35,36,38-44 and 51-57 is/are rejected.
- 7) ☒ Claim(s) 4, 11,17-21,24,30-34,37,45-50 and 58-62 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>28 August 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. ***Claims 38-50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.***

In line 5 of claim 38, the phrase "said catalyst" lacks antecedent basis; it appears that the phrase should read "said electrocatalyst".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1-3, 5-10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al., "Preparation of Highly Dispersed Pt + Ru Alloy Clusters and the Activity for the Electrooxidation of Methanol", J. Electroanalytical Chemistry, 1987, Vol. 229:395-406, Applicants' submitted art.

Watanabe et al. disclose the production of a binary catalyst containing Pt and Ru, said production comprising reducing chloroplatinic acid by adding thereto powdered sodium bisulphite (also known as sodium hydrogen sulfite), resulting in the production of a colorless soluble intermediate of platinum (considered to read upon **claims 8-10** and the claim limitation "platinum reagent"). Hydrogen peroxide is added to the solution, during which addition sodium hydroxide is added to adjust the pH to about 5 (considered to read upon the limitation "oxidizing agent", as well as **claim 12**). An aqueous solution containing ruthenium chloride (considered to read upon **claims 2 and 5-7**) is then added dropwise (considered to read upon **claim 3**) to the solution, resulting in a colloidal product. A carbon black mud is added thereto to produce a supported catalyst. See page 396 of Watanabe et al.

In view of these teachings, Watanabe et al. anticipate claims 1-3, 5-10, and 12.

5. Claims 13-16, 22, 23, 25-29, 35, 36, 38-44, 51-57, and 63-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Auer et al. (U. S. Patent No. 6,066,410).

Auer et al. teach a platinum/ruthenium alloy catalyst including finely dispersed alloy particles on a powdery, electrically conductive carrier material.

Examples of the carrier material include carbon black. The platinum/ruthenium alloy particles are applied to the carrier material in a concentration of 10 to 50 wt. % based on the total weight of the catalyst. The platinum/ruthenium atomic ratio lies between 1:4 and 4:1. See col. 4, lines 9-17 of Auer et al.

This disclosure is considered to read upon **claims 13-16, 22, 23, 25-29, 35, and 36.**

The catalyst is used to prepare various components of fuel cells, such as gas diffusion electrodes (in which the catalyst is processed into an ink using a solution of Nafion and applied as the ink to a carbon paper), proton-conducting polymer membranes, etc. See col. 5, lines 29-50 of Auer et al.

This disclosure is considered to read upon **claims 38-40, 41-44, 51-57, and 63-66.**

In view of these teachings, Auer et al. anticipate claims 13-16, 22, 23, 25-29, 35, 36, 38-44, 51-57, and 63-66.

6. Claims 13-16, 25, 26, 28, 29, 38-44, 51-57, and 63-66 are rejected under 35 U.S.C. 102(e) as being anticipated by Adzic et al. (U. S. Patent No. 6,670,301, Applicants' submitted art).

Adzic et al. teach an electrocatalyst provided for use in a fuel cell (having an anode including the electrocatalyst; the anode can preferably have a perfluorinated polymer membrane on its surface). The electrocatalyst comprises a conductive support

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material, ruthenium nanoparticles and a Group VIII noble metal (preferably platinum).

The ruthenium nanoparticles deposited on the support material are preferably suspended in water or a solvent. The Group VIII metal is preferably present in an amount between about 0.1 and 25 wt. % based on the amount of ruthenium particles.

In terms of the electrocatalyst, there is about 10 to about 40 wt. % platinum and ruthenium, and from about 60 to about 90 wt. % conductive material.

See col. 4, lines 15-40 of Adzic et al.

The electrocatalyst is prepared by depositing ruthenium nanoparticles on the support material, followed by heating in an H₂ atmosphere, cooling, and then contact with a solution containing Group VIII noble metal compound (e.g., H₂PtCl₆). See col. 4, line 41 to col. 5, line 25 of Adzic et al.

The electrocatalyst can be employed to prepare fuel cell electrodes (via placing the catalyst on a Nafion membrane), or may be employed to prepare a fuel cell anode (by applying a slurry of the electrocatalyst onto a membrane comprising a perfluorinated polymer, which is then deposited onto a carbon substrate).

In view of these teachings, Adzic et al. anticipate claims 13-16, 25, 26, 28, 29, 38-44, 51-57, and 63-66.

Allowable Subject Matter

7. Claims 4, 11, 17-21, 24, 30-34, 37, 45-50, and 58-62 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

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independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

The cited references of record do not teach or suggest the limitations of these claims, e.g., regarding the treatment of the particulate carbon, either with oxidizing acids or oxygen gas, hydrogen peroxide, organic peroxides, or ozone, or the addition of a dispersion or surfactant to the chloroplatinic acid solution.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Patricia L. Hailey/plh
Examiner, Art Unit 1755
February 7, 2007


J. A. TSENG
SUPERVISORY PATENT EXAMINER